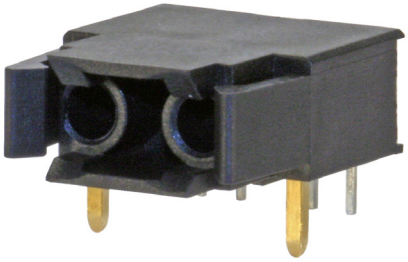
Ratioplast
Electronics | OptoElectronics

Data sheet **FO transceiver 650 nm**

RP-02 Transceiver 650nm

1 General

The RP-02 Transceiver is designed to suit applications with low cost plastic optical fiber. A fast 650nm LED with high optical power output and a fast PIN-photodiode with high optical sensitivity make this transceiver a good choice for fiber optic systems using 1mm plastic optical fiber (POF).



Pic. 1 RP-02 Transceiver 650 nm

2 Application

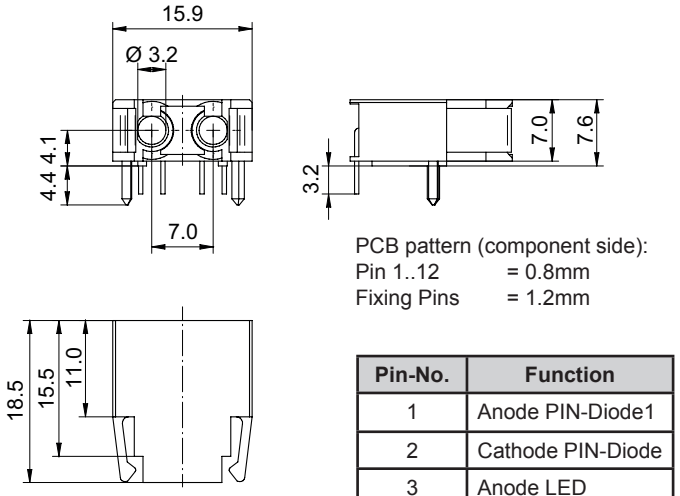
Due to the max. data rate of 5MBit/s, the good optical properties and the easy optical fiber termination, the transceiver may be used in many applications:

- Optical networks
- Industrial electronics
- Power electronics
- Consumer electronics

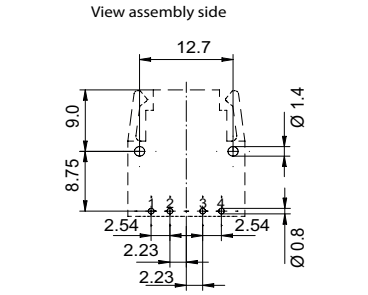
3 Ordering information

Specification	Part number
650nm RP-02	905R265000001

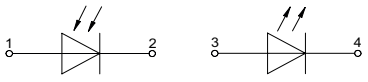
4 Drawing



PCB pattern (component side):
Pin 1..12 = 0.8mm
Fixing Pins = 1.2mm



Pin-No.	Function
1	Anode PIN-Diode1
2	Cathode PIN-Diode
3	Anode LED
4	Cathode LED



Schematic

Pic. 2 Drawing

5 Features

- 650nm LED
- 150µW fiber coupled power @ 10mA
- 400...1100nm PIN-Photodiode
- t_r, $t_f \leq 5$ns
- suitable for plastic optical fiber (POF) and large core silica fiber (HCS®)
- Plastic case
- reflow-/ wave soldering
- Pick-and-place support

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6 Maximum ratings

Stresses beyond those listed under ´Maximum Ratings´ may cause permanent damage to the device. Listed values are stress limits only nd functional operation of the device at these conditions is not recommended. Exposure to maximum rating conditions for extended periods may affect the device reliability.

6.1 Transmitter

Parameter	Value	Unit
operating temperature	-40 to +85	°C
storage temperature	-55 to +100	°C
junction temperature	100	°C
soldering temperature 2mm from housing, t ≤ 5s	260	°C
reverse voltage	3	V
forward current	50	mA
surge current t ≤ 10µs, D=0	1	A
power dissipation	120	mW
thermal resistance	450	K/W

6.2 PIN-diode

Parameter	Value	Unit
operating temperature	-40 to +100	°C
storage temperature	-55 to +100	°C
junction temperature	100	°C
soldering temperature 2mm from housing, t ≤ 5s	260	°C
reverse voltage	50	V
power dissipation	100	mW
thermal resistance	750	K/W

7 Technical data

7.1 Transmitter

Parameter	Value	Unit
wavelength λ	650	nm
spectral bandwith Δλ	25	nm
switching times (I_F=50mA) t_R t_F	 15 (<17) 18 (<20)	 ns ns
capacitance C_J (V_R=0V)	30	pF
forward voltage V_F (I_F=50mA)	2.1 (<2.8))	V
output power P_{OUT} coupled into 1mm plastic fiber (I_F=10mA)	150 (>100)	µW
temperature coeffcient P_{OUT}	-0.4	%/K
temperature coeffcient V_F	-3	mV/K
temperature coeffcient λ	-0.16	nm/K

7.2 PIN-diode

Parameter	Value	Unit
peak sensitivity wavelength λ	850	nm
spectral bandwith Δλ	400 to 1100	nm
switching times (R_L=50W, V_R=20V) t_R t_F	 5 5	 ns ns
capacitance (V_R = 0V, f = 1MHz)	11	pF
forward voltage V_F (I_F=80mA)	1.3	V
Spectral sensitivity (λ = 850nm)	0.62	A/W
temp. coefficent I_P λ=560...660nm	-0.4	%/K
temp. coefficent I_P λ=850nm	0.18	%/K
dark current (V_R = 20V)	1 (≤ 10)	nA

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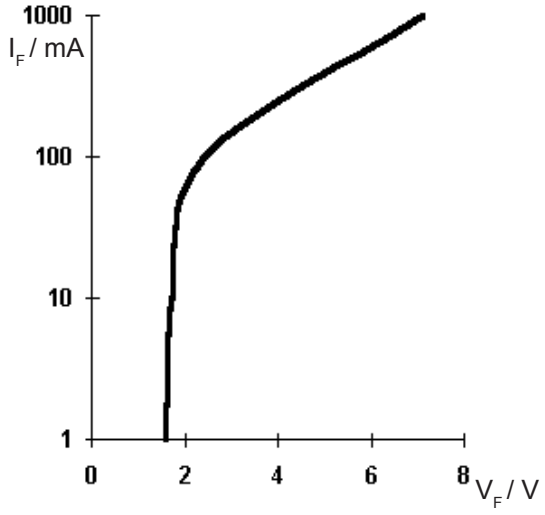
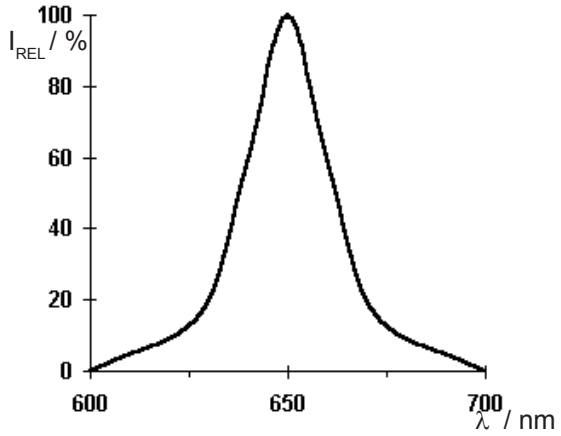
8 Characteristics transmitter

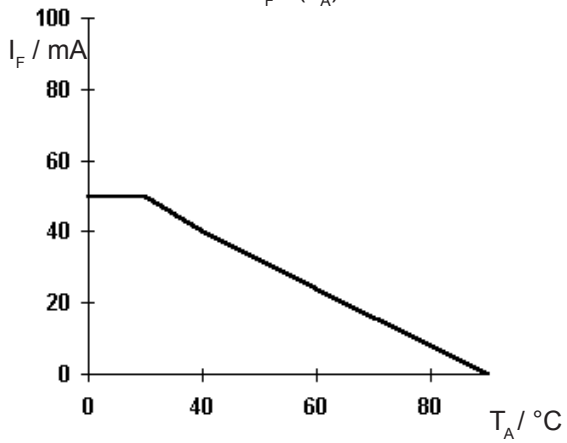
Forward current $I_F=f(V_F)$
Pulse, duration = 20µs



Relative spectrum $I_{REL}=f(\lambda)$

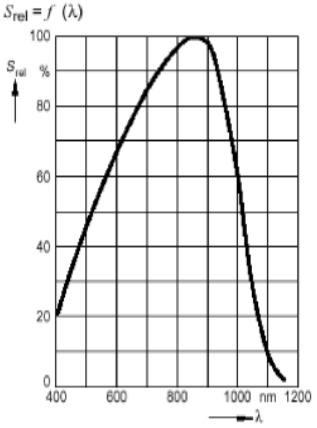


Max. forward current $I_F=f(T_A)$

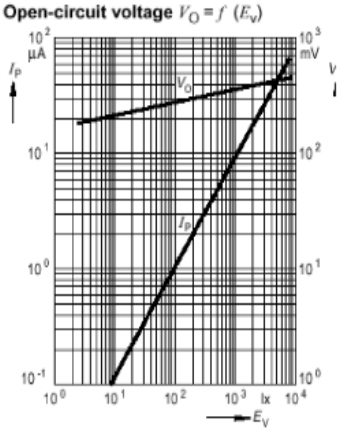


8 Characteristics PIN-diode

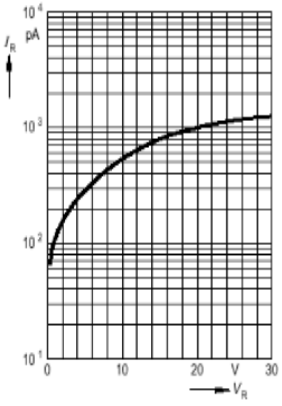
Relative spectral sensitivity
$S_{rel} = f(\lambda)$



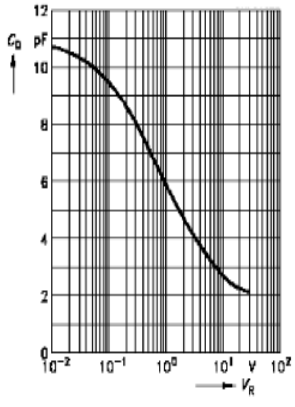
Photocurrent $I_P = f(E_v)$, V_R = 5 V
Open-circuit voltage $V_O = f(E_v)$



Dark current
$I_R = f(V_R)$, E = 0



Capacitance
$C = f(V_R)$, f = 1 MHz, E = 0



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